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from Captain Kater's experiments, to consist in placing it in the magnetic meridian, joining the opposite poles of a pair of bar magnets, (they being in the same line,) and laying them flat upon the needle, with their poles upon its centre; then, having elevated the distant extremities of the magnets, so that they may form an angle of about 2° or 3° with the needle, they are to be drawn from the centre to its extremities, carefully preserving the same inclination; and having joined the poles of the magnets at a distance from the needle, the operation is to be repeated ten or twelve times upon each surface.

In needles from five to eight inches long, their weights being equal, Captain Kater found their directive forces nearly as the lengths; but in needles of nearly the same length and form, the directive force is as the mass, and not dependent upon the extent of surface.

Lastly, the author ascertained that the deviation of a compass needle, occasioned by the attraction of soft iron, depends, as Mr. Barlow has advanced, upon extent of surface, and is wholly independent of the mass; excepting that a thickness of the iron, amounting to about two tenths of an inch, is requisite to the complete development of the attractive energy.

Notice respecting a Volcanic Appearance in the Moon. In a Letter addressed to the President. By Captain Henry Kater, F.R.S. Read February 8, 1821. [Phil. Trans. 1821, p. 130.]

This volcano was first observed by Captain Kater on Sunday the 4th of February, the moon being then two days old, with a Newtonian telescope of $6\frac{1}{4}$ inches aperture, and a power of 74. The position of the volcano is shown in an annexed drawing; its appearance was that of a small nebula, subtending an angle of 3 or 4 seconds, and its brightness very variable.

It was again observed on the evenings of the 5th and 6th, but was then more faint, though occasionally exhibiting the appearance of a luminous point, like a star of the 6th or 7th magnitude. Captain Kater thinks that the distance of the volcano from the edge of the moon was about one tenth of her diameter; and the angle which it formed with a line joining the cusps on the last-mentioned evening, was about 50° . On the 7th it was scarcely visible, in consequence, probably, of the increased light of the moon.

A Further Account of Fossil Bones discovered in Caverns inclosed in the Lime-stone Rocks at Plymouth. By Joseph Whidbey, Esq. In a Letter addressed to Sir Everard Home, Bart. V.P.R.S. Read February 8, 1821. [Phil. Trans. 1821, p. 133.]

These bones were found not far from those previously described by Mr. Whidbey, and in a similar situation; the cavern being entirely inclosed in the surrounding rock, and without the smallest appearance of any communication ever having existed with the sur-